

Selected Excerpts
Enbridge Gas Transmission & Midstream
Class Determination Process
11/18/2010

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6D HCA Identification Method

6D1 **Method 2** - All Enbridge pipelines which are as-built within the GIS environment are evaluated for HCA determination utilizing the Potential Impact Radius (PIR) (Method 2). The Potential Impact Circle (PIC) is the circle of radius equal to the PIR which is moved along the pipeline route to determine if HCA (structure density, Identified Site, etc.) criteria is being met as executed within Enbridge's HCA Analysis Program. The calculation to determine the PIC radius is as follows: $r = 0.69 * (\text{square root of } (p * d^2))$, where **r** = is the radius of a circular area in feet surrounding the point of failure, **p** is the maximum allowable operating pressure (MAOP) in the pipeline segment in pounds per square inch and **d** is the nominal diameter of the pipeline in inches. The annual PIC table is our documented source to prove Method 2 was used for all active, in service pipelines (reference Exhibit C).

6D2 **Method 1** – all class 3 and 4 locations and PIC spans containing Identified Sites and Places of Assembly in Class 1 and 2 locations – was used on the few Enbridge pipelines that do not currently exist within the GIS environment. An annual cumulative summary of all TEMP IDs utilized since 2004 to current is maintained by CDS and as the pipelines are as-built within the GIS environment, the TEMP IDs are either totally retired or replaced with Method 2 HCA IDs. In 2010, three TEMP IDs were active on the 2010 Publish Range HCA Report: two for AGT (0-ID#2: CSYS-EOLN/Line C-3L and 0-ID#3: OSYS-EOLN/Line O-2) and one for TETLP (7-ID#7: BATE-LEBA/Line 3A). A fourth TEMP ID for the OGT business unit was created (2-ID#1: NOAR-LEQU/Line 1X2) but is a placeholder since the OGT business unit is not part of the 2010 Integrity Assessment Plan. Reference Exhibit D for formats for both Method 1 and 2 HCAs.

6D3 **Prorating Structure Option** - The prorating structure calculation option was utilized by Enbridge through the December, 2006 analysis year. Before the 2007 HCA analysis year was executed, aerial photography was acquired on those pipelines where the PIC exceeded the 660' corridor and modifications were made to field structure capture instructions to include field acquisition of structure data beyond the 660' corridor for those same pipelines.

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6G Field Verification of HCAs

The designation of HCA and class location ranges and sites is initially done in the Enbridge Houston Office, utilizing the GIS, which incorporates the data sources already described in Section 1 (Data). This identification is considered to be conservative in nature.

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6J Quality Assurance/Quality Control

6J1 Quality assurance and quality control checkpoints are built into the HCA and class

Note that any ellipses ("...") indicate redacted language, tables, or figures. Some of the material contained in the full procedure is proprietary and/or not relevant to this case and thus has been redacted from these excerpts accordingly.

analysis process esat critical junctures and are specifically called out on the respective workflows. Primarily these checkpoints are executed by the CDS Manager and/or Compliance Analysis Supervisor for higher level verification of accuracy and through a cross training of specialized GIS analysts both within the Compliance Analysis and As-Built groups. Key activities and resulting documents receive a second, and sometimes third, pass for data accuracy verification from a compliance analyst and a business systems operations specialist (who possess a skill set different from the GIS analysts). Additionally, the Director of Pipeline Integrity and the Director of Operational Compliance conducts their own cross check when building the annual Assessment Plan, reviewing the annual DOT encroachment program, regional pipeline integrity engineers review HCA results while conducting assessments and field personnel verify structure information during the course of some of their regular pipeline maintenance activities.

6J2 The continuous development and maintenance of documentation and process workflows are key tools to maintaining qualified personnel to execute and evaluate the annual HCA and class processes. Along with the documentation for each of the analysis activities, quality control and quality assurance is realized through other methods such as cross training, project kick off meetings, lessons learned sessions, and periodic process improvement initiatives.

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